GRADE 12 DIPLOMA EXAMINATION

Mathematics 30

June 1990

Alberta
EDUCATION

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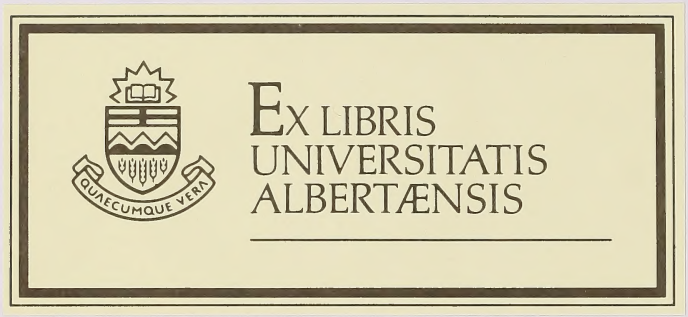

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GRADE 12 DIPLOMA EXAMINATION
MATHEMATICS 30

DESCRIPTION

Time: 2½ hours

Total possible marks: 65

This is a **closed-book** examination consisting of **three** parts:

PART A has 40 multiple-choice questions each with a value of one mark.

PART B has 12 machine-scorable open-ended questions each with a value of one mark.

PART C has three written-response questions for a total of 13 marks.

A tear-out formula and z-score page is included in this booklet.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

GENERAL INSTRUCTIONS

Fill in the information required on the answer sheet and the examination booklet as directed by the examiner.

You are expected to provide your own approved scientific calculator.

Carefully read the instructions for each part before proceeding.

DO NOT FOLD EITHER THE ANSWER SHEET OR THE EXAMINATION BOOKLET.

The presiding examiner will collect your answer sheet and examination booklet and send them to Alberta Education.

JUNE 1990

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PART A

INSTRUCTIONS

In this part of the examination, there are 40 multiple-choice questions each with a value of one mark. All numbers used in the questions are to be considered as **exact** numbers and are not the result of a measurement.

Read each question carefully and decide which of the choices **best** completes the statement or answers the question. Locate that question number on the separate answer sheet provided and fill in the space that corresponds to your choice. **Use an HB pencil only.**

Example

This diploma examination is for the subject area of

A. Biology
B. Physics
C. Chemistry
D. Mathematics

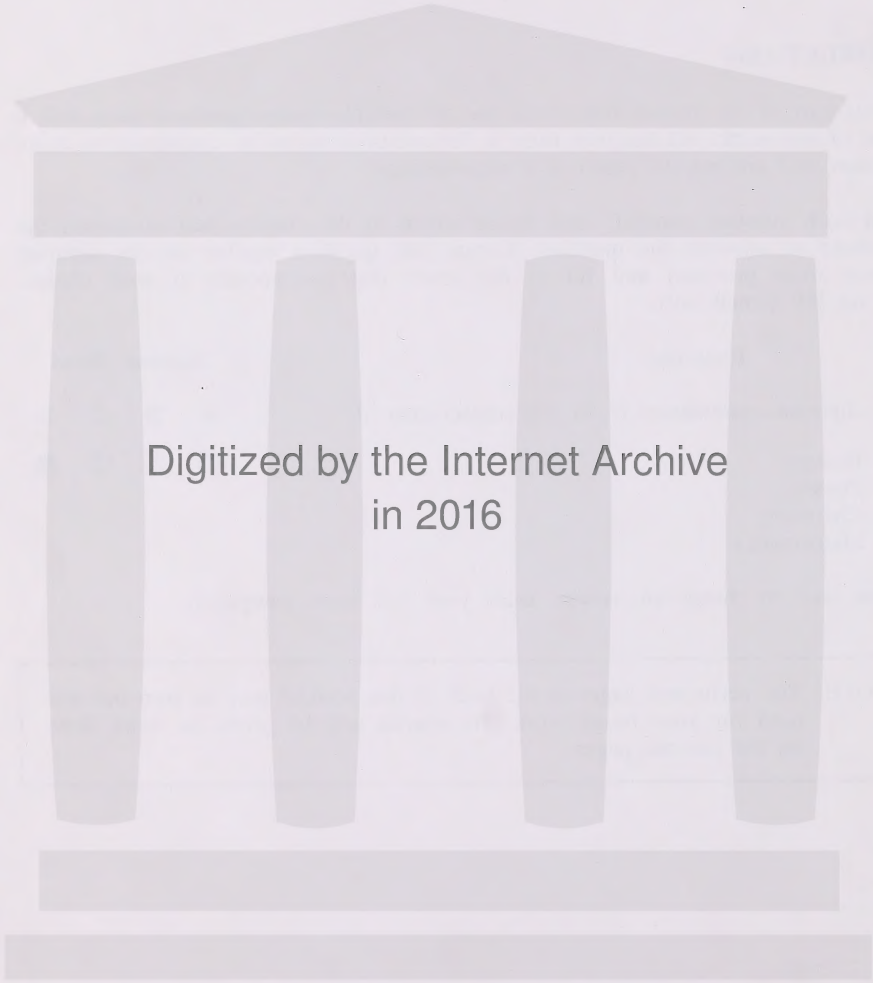
Answer Sheet

A	B	C	D
①	②	③	●

If you wish to change an answer, erase your first mark completely.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

DO NOT TURN THE PAGE TO START THE EXAMINATION UNTIL TOLD TO DO SO BY THE PRESIDING EXAMINER.



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1. Each base angle of an isosceles triangle is 50° and the length of each side opposite these angles is 12 cm. The length of the third side of this triangle correct to the nearest tenth of a centimetre is

A. 16.4 cm
B. 15.4 cm
C. 14.5 cm
D. 13.4 cm

2. In ΔPQR, $\angle Q = 90°$, $\angle R = 30°$, and $q = 20$ cm. The measure of p is

A. $10\sqrt{3}$ cm

B. $20\sqrt{3}$ cm

C. $\frac{10\sqrt{3}}{3}$ cm

D. $\frac{20\sqrt{3}}{3}$ cm

3. If $\sin\theta = -\frac{4}{7}$, $\frac{3\pi}{2} < \theta < 2\pi$, then the value of $\frac{1}{\cot\theta}$ is

A. $\frac{\sqrt{33}}{4}$

B. $\frac{4}{\sqrt{33}}$

C. $-\frac{4}{\sqrt{33}}$

D. $-\frac{\sqrt{33}}{4}$

4. For the equation $4\cos\theta - \sqrt{12} = 0$, $0 < \theta \leqq 2\pi$, the measure of θ is

A. $\frac{\pi}{3}, \frac{5\pi}{3}$

B. $\frac{2\pi}{3}, \frac{4\pi}{3}$

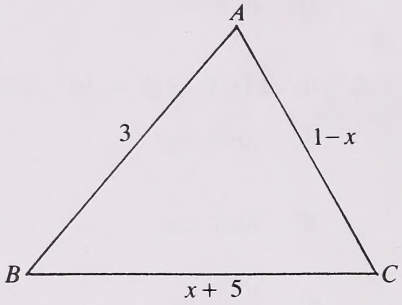
C. $\frac{5\pi}{6}, \frac{7\pi}{6}$

D. $\frac{\pi}{6}, \frac{11\pi}{6}$

5. The expression $\cos(4x)\cos(3x) - \sin(4x)\sin(3x)$ is equivalent to

A. $\cos(7x)$
B. $\sin(7x)$
C. $\cos x$
D. $\sin x$

6. In ΔABC shown at the right, the value of $\cos A$ is given by



A. $\dfrac{2x - 2}{4x + 5}$

B. $\dfrac{2 - 2x}{4x + 5}$

C. $\dfrac{4x + 5}{2x - 2}$

D. $\dfrac{4x + 5}{2 - 2x}$

7. If $P(-3, 4)$ is on the terminal arm of $\angle A$ in standard position, then $\tan A$ equals

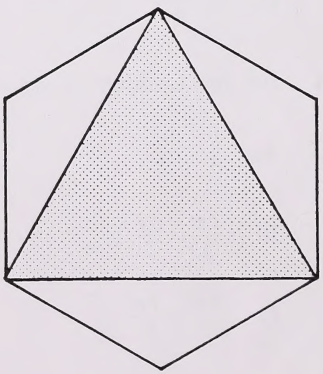
A. $\dfrac{4}{3}$

B. $\dfrac{3}{4}$

C. $-\dfrac{3}{4}$

D. $-\dfrac{4}{3}$

8. Alternate vertices of a regular hexagon are joined to form an equilateral triangle, as shown in the diagram at the right. If the perimeter of the hexagon is 24 cm, then the area of the equilateral triangle correct to the nearest tenth of a square centimetre is



A. 6.9 cm^2

B. 20.8 cm^2

C. 24.0 cm^2

D. 41.6 cm^2

9. The expression $\csc \theta \cot \theta \sec \theta$ in terms of $\sin \theta$ is

A. $\sin^2 \theta$

B. $2 \sin \theta$

C. $-\sin^2 \theta$

D. $\dfrac{1}{\sin^2 \theta}$

10. The equation $\sqrt{(x - 3)^2 + (y + 4)^2} = 4$ defines a circle with

A. centre $(3, -4)$ and radius 4
B. centre $(-3, 4)$ and radius 4
C. centre $(3, -4)$ and radius 16
D. centre $(-3, 4)$ and radius 16

11. An equation of the ellipse with x-intercepts ± 3 and y-intercepts ± 6 is

A. $4x^2 + y^2 = 324$

B. $x^2 + 4y^2 = 324$

C. $4x^2 + y^2 = 36$

D. $x^2 + 4y^2 = 36$

12. For an ellipse with foci $(0, \pm m)$ and vertices $(0, \pm n)$, the length of the minor axis is given by

A. $2\sqrt{n^2 - m^2}$

B. $2\sqrt{n^2 + m^2}$

C. $2(n^2 - m^2)$

D. $2(n^2 + m^2)$

13. The foci of a hyperbola lie on the same line as the

A. asymptotes
B. minor axis
C. conjugate axis
D. transverse axis

14. A parabola passes through the point $(7, -2)$ and has its focus at $(4, 2)$. If its directrix is parallel to the y-axis, then an equation of this parabola is

A. $(y - 2)^2 = 4(x - 3)$

B. $(y - 2)^2 = 8(x - 5)$

C. $(y - 2)^2 = 16(x - 6)$

D. $(y - 2)^2 = \frac{16}{3}(x - 4)$

15. The equation of the circle $(2x + 4)^2 + (2y - 6)^2 = 16$ is equivalent to

A. $x^2 + y^2 + 2x - 3y + 9 = 0$

B. $x^2 + y^2 + 4x - 6y + 9 = 0$

C. $x^2 + y^2 + 4x - 6y + 18 = 0$

D. $x^2 + y^2 + 8x - 12y + 18 = 0$

16. A hyperbola is centred at the origin with its foci on the x-axis and 12 cm apart. If the length of the conjugate axis is 8 cm, then an equation that defines the hyperbola is

A. $\frac{y^2}{36} - \frac{x^2}{16} = 1$

B. $\frac{x^2}{36} - \frac{y^2}{16} = 1$

C. $\frac{y^2}{20} - \frac{x^2}{16} = 1$

D. $\frac{x^2}{20} - \frac{y^2}{16} = 1$

17. An arch 24 m wide at its base forms one half of an ellipse. If the height of the arch at its centre is 8 m, then an equation of the ellipse with centre (0, 0) that defines the curve of the arch is

A. $\frac{x^2}{144} + \frac{y^2}{64} = 1$

B. $\frac{x^2}{576} + \frac{y^2}{64} = 1$

C. $\frac{x^2}{144} + \frac{y^2}{16} = 1$

D. $\frac{x^2}{576} + \frac{y^2}{16} = 1$

18. For the geometric series $2 + 2\sqrt{2} + 4 + \ldots$, the sum of the first six terms is

A. $14\sqrt{2}$

B. $14(\sqrt{2} + 1)$

C. $14(\sqrt{2} - 1)$

D. $15(\sqrt{2} + 1)$

19. The first shot from a water pistol uses 3 mL of water. On each successive shot, the amount of water used is $\frac{5}{6}$ that of the previous shot. Correct to the nearest millilitre, the maximum amount of water that can be used before reloading is

A. 12 mL
B. 15 mL
C. 18 mL
D. 24 mL

20. The nth term of a series is given by $t_n = 5n - 3$. An expression for the sum of n terms of this series is

A. $S_n = \frac{5}{2}(n^2 - n)$

B. $S_n = \frac{5}{2}n^2 - n$

C. $S_n = \frac{5n^2 + n}{2}$

D. $S_n = \frac{5n^2 - n}{2}$

21. The $\lim_{x \to \infty} \left(\frac{100x + 5x^2}{2x^2 + 10x} \right)$ is

A. $\frac{1}{2}$

B. 0

C. $\frac{5}{2}$

D. 10

22. Lauren deposits \$450 every six months into an account at 9% per annum compounded semi-annually. Immediately after the 7th deposit, the accumulated amount in her account is

A. \$4140.20
B. \$3608.62
C. \$3433.50
D. \$3291.75

23. In an arithmetic sequence, if $t_5 = -11$ and $t_{12} = -25$, then the first term is

A. -3
B. -2
C. 2
D. 3

24. The value of $\sum_{k=3}^{24} (2k + 1)$ is

A. 560
B. 588
C. 616
D. 672

25. Pipes are piled together such that each successive layer has one less pipe than the layer beneath it. If there are 437 pipes and 23 layers, the number of pipes in the bottom layer is

A. 27
B. 28
C. 29
D. 30

26. For the arithmetic sequence 3, 7, 11, . . . , 115, the number of terms is

A. 28
B. 29
C. 38
D. 39

Use the following information to answer question 27.

A pendulum is set in motion from a position 10.0° from the vertical. The angles, measured from the vertical for subsequent complete swings of the pendulum, form a geometric sequence as shown in the data table:

Number of complete swings	1	2	3
Angle from the vertical	9.00°	8.10°	7.29°

27. After 9 complete swings, the angle from the vertical correct to the nearest tenth of a degree is

A. 1.0°

B. 2.0°

C. 3.9°

D. 4.3°

---

28. The heart rates of a population are found to be normally distributed with a mean of 72 and a standard deviation of 10 beats per minute. The percentage of people with a heart rate between 60 and 80 beats per minute is

A. 9.68%
B. 32.70%
C. 67.30%
D. 90.32%

29. A manufacturer has determined that the ''lives'' of his computer chips are normally distributed with a standard deviation of 18 months. The probability that one of these chips will last more than 5 a is 0.242. In a production run of 8000 chips, how many would be expected to last more than 5 a?

A. 1936
B. 2064
C. 2400
D. 5600

30. In a given set of data with a mean of $4x + 6$ and a standard deviation of x, a mark of 30 produces a z-score of $x - 2$. The standard deviation correct to the nearest tenth is

A. 22.0
B. 6.0
C. 5.1
D. 4.0

Use the following information to answer question 31.

Data collected on the ages of 620 students in a school:

Age	No. of Boys	No. of Girls
14	10	15
15	58	52
16	92	80
17	77	69
18	60	30
19	33	44

31. The probability that a student chosen at random from the school will be a boy who is 18 or older is

A. 0.10
B. 0.15
C. 0.18
D. 0.27

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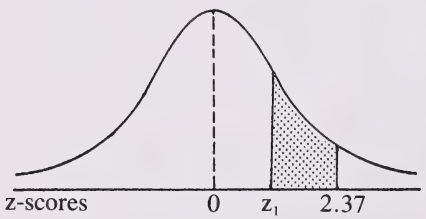
32. A standardized normal distribution is shown in the diagram at the right. If the shaded area is 0.1004, then the value of z_1 is



A. 0.25
B. 1.23
C. 2.12
D. 3.60

33. The marks on an examination were normally distributed with a mean of 54 and a standard deviation of 12. A decision was made to adjust the original marks by raising the mean to 64 while reducing the standard deviation to 8 and leaving the z-scores unchanged. For an original mark of 36, the corresponding adjusted mark would be

A. 42
B. 46
C. 52
D. 56

34. If $\log_a(x + b) = c$, then x in terms of a, b, and c is

A. $a^c - b$

B. $c^a - b$

C. $b^c - a$

D. $c^b - a$

35. Elizabeth invests \$500 at 10% per annum compounded annually. Correct to the nearest tenth of a year, in how many years will her investment amount to \$1000?

A. 10.0 a
B. 9.7 a
C. 7.3 a
D. 5.0 a

36. When $2x^5 - 3x^3 - 8x^2 - 8$ is divided by $x - 2$, the sum of the coefficients of the terms in the quotient is

A. -59
B. -23
C. -19
D. 17

37. If $-5x$ is a factor of the polynomial $P(x)$, then $P(0)$ is

A. -5

B. 0

C. $\frac{1}{5}$

D. 5

38. The area of a rectangle is $(x^3 + 5x^2 - 4x - 20)$ cm^2 and the width is $(x + 2)$ cm. If the length of the rectangle is 8 cm, then the width in centimetres is

A. 3 cm
B. 5 cm
C. 6 cm
D. 8 cm

39. A factored form of $x^3 - x^2 - bx + b$ is

A. $(x - 1)(x^2 - b)$

B. $(x - 1)(x^2 + b)$

C. $(x + 1)(x^2 - b)$

D. $(x - 1)(x + 1)(x - b)$

40. If $P(x)$ is a cubic polynomial function with $P(1) = P(3) = P(-4) = 0$ and $P(0) = 36$, then $P(x)$ is

A. $-3(x - 1)(x - 3)(x + 4)$
B. $-2(x + 1)(x + 3)(x - 4)$
C. $2(x + 1)(x + 3)(x - 4)$
D. $3(x - 1)(x - 3)(x + 4)$

YOU HAVE NOW COMPLETED THE MULTIPLE-CHOICE PART OF THE EXAMINATION. PROCEED DIRECTLY TO PART B.

PART B

INSTRUCTIONS

In this part of the examination, there are 12 machine-scorable open-ended questions each with a value of one mark. All numbers used in the questions are to be considered as **exact** numbers and are not the result of a measurement.

Read each question carefully.

Solve each question and write your answer correct to the nearest tenth.

Record your answer on the answer sheet provided by writing it in the boxes of the corresponding answer field and by filling in one circle in **every** column as illustrated. **Use an HB pencil only**.

Sample Questions and Solutions

1. If θ is acute and $\sin \theta = 0.6735$, then the measure of θ correct to the nearest tenth of a degree is _____ .

   $\theta = 42.33777464...°$

   RECORD 042.3

2. For the arithmetic series $-8 + (-5) + (-2) + \ldots + (85)$, the number of terms correct to the nearest tenth is _____ .

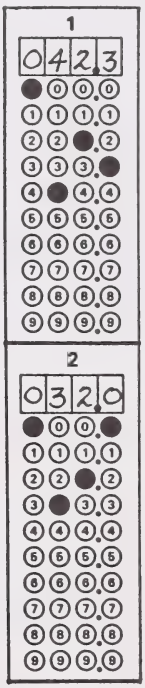
   $85 = -8 + (n - 1)(3)$

   $93 = 3n - 3$

   $n = 32$

   RECORD 032.0

Answer Sheet

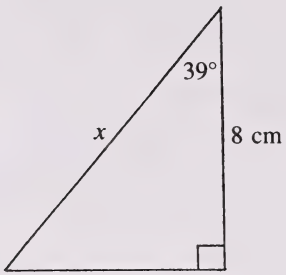


If you wish to change an answer, erase your first answer completely.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

START PART B IMMEDIATELY.

1. In the triangle at the right, the measure of x correct to the nearest tenth of a centimetre is _____.



2. In ΔABC, $\angle B = 53°$, $b = 6$, and $c = 7$. If $\angle C$ is obtuse, then the measure of $\angle C$ correct to the nearest tenth of a degree is _____.

3. For the parabola $y^2 - 8y - 8x - 8 = 0$, the distance between the focus and the vertex correct to the nearest tenth is _____.

4. The radius of the circle $x^2 + y^2 - 6x + 10y + 19 = 0$ correct to the nearest tenth is _____.

5. In a geometric sequence with a common ratio of 2, the 9th term is 640. The value of the first term correct to the nearest tenth is _____.

6. If the infinite geometric series $4 + 5x + \frac{25x^2}{4} + \ldots + 4\left(\frac{5x}{4}\right)^{n-1} + \ldots$ is divergent, then the smallest positive value for x correct to the nearest tenth is _____.

7. The sum of an infinite geometric series is 12 and the first term is 8. The common ratio of this series correct to the nearest tenth is _____.

8. Michael's score of 68 on a Chemistry test was better than 95.45% of his classmates' scores. If the test marks were normally distributed with a standard deviation of 14.3, then the mean class mark correct to the nearest tenth was _____.

9. A student's mark of 65 on a test corresponds to a z-score of -1.8. If the mean score is 70, then the standard deviation for the test correct to the nearest tenth is _____.

10. If $\log_{(x-4)}(x^2 - 2x - 61) = 2$, then the value of x correct to the nearest tenth is _____.

RECORD THE ANSWER ON THE ANSWER SHEET

11. If $x^3 - 7x^2 + kx + 3$ is divided by $x - 3$ and the remainder is -17, then the value of k correct to the nearest tenth is _____.

12. For the graph of $y = -(x - 2)^2(3 - x)(x - 1)$, the value of the y-intercept correct to the nearest tenth is _____.

RECORD THE ANSWER ON THE ANSWER SHEET

YOU HAVE NOW COMPLETED THE MACHINE-SCORABLE OPEN-ENDED PART OF THE EXAMINATION. PROCEED DIRECTLY TO PART C.

PART C

INSTRUCTIONS

In this part of the examination, there are three written-response questions for a total of 13 marks. All numbers used in the questions are to be considered as **exact** numbers and are not the result of a measurement.

Write your solutions in the examination booklet as neatly as possible.

Your solutions **must show all** pertinent explanations, calculations, and formulas. Full marks will be assigned **only** to those solutions that show **all** pertinent explanations, calculations, and formulas.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. **No marks** will be given for work done on the tear-out pages.

START PART C IMMEDIATELY.

FOR DEPARTMENT USE ONLY

(5 marks)

1. In a kitchen plan, the sink, stove, and refrigerator determine the vertices of a triangle. The distance from the sink to the refrigerator is 3.9 m and the distance from the sink to the stove is 4.2 m. The angle at the vertex determined by the sink is 50°.

a. Draw a diagram showing the position of the sink and the two appliances as well as all given lengths and angle sizes.

b. Find the perimeter of the triangle correct to the nearest tenth of a metre.

The perimeter is _____ m

c. In the triangle, which angle has the greatest measure?

The angle with the greatest measure is _____

_____

FOR DEPARTMENT USE ONLY

2. A hyperbola with centre at the origin has a focus $F(0, 6)$ and a vertex $V(0, 5)$. Find the first degree equations that define the asymptotes for this hyperbola.

(4 marks)

The asymptotes are _____ and _____

FOR DEPARTMENT USE ONLY

(4 marks)

3. For the equation $\log_5(x - 4) + \log_5(x - 2) = \log_5(3)$, find the value of x.

The value of x is _____

YOU HAVE NOW COMPLETED THE EXAMINATION. IF YOU HAVE TIME, YOU MAY WISH TO GO BACK AND CHECK YOUR ANSWERS.

MATHEMATICS 30
FORMULA SHEET

I. Trigonometry

1. $\pi = 3.14159$
2. $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$
3. $a^2 = b^2 + c^2 - 2bc \cos A$
4. $\sin^2 A + \cos^2 A = 1$
5. $1 + \tan^2 A = \sec^2 A$
6. $1 + \cot^2 A = \csc^2 A$
7. $\sin\left(\dfrac{\pi}{2} - \theta\right) = \cos\theta$
8. $\cos\left(\dfrac{\pi}{2} - \theta\right) = \sin\theta$
9. $\sin(A + B) = \sin A \cos B + \cos A \sin B$
10. $\sin(A - B) = \sin A \cos B - \cos A \sin B$
11. $\cos(A + B) = \cos A \cos B - \sin A \sin B$
12. $\cos(A - B) = \cos A \cos B + \sin A \sin B$
13. $\sin(-\theta) = -\sin\theta$
14. $\cos(-\theta) = \cos\theta$
15. $\tan(-\theta) = -\tan\theta$

II. Quadratic Relations

1. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
2. $d = \dfrac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}}$
3. $M\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$
4. $(x - h)^2 + (y - k)^2 = r^2$
5. $x^2 + y^2 + Dx + Ey + F = 0$
6. $(y - k)^2 = 4p(x - h)$
7. $(x - h)^2 = 4p(y - k)$
8. $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1,\ a^2 = b^2 + c^2$
9. $\dfrac{y^2}{a^2} + \dfrac{x^2}{b^2} = 1,\ a^2 = b^2 + c^2$
10. $\dfrac{x^2}{a^2} - \dfrac{y^2}{b^2} = 1,\ c^2 = a^2 + b^2$
11. $\dfrac{y^2}{a^2} - \dfrac{x^2}{b^2} = 1,\ c^2 = a^2 + b^2$

III. Sequences, Series, and Limits

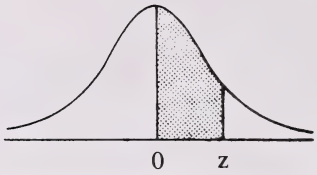
1. $t_n = a + (n - 1)d$
2. $S_n = \dfrac{n(a + t_n)}{2}$
3. $S_n = \dfrac{n[2a + (n - 1)d]}{2}$
4. $A = P(1 + i)^n$
5. $t_n = ar^{n-1}$
6. $S_n = \dfrac{a(r^n - 1)}{r - 1}$
7. $S_n = \dfrac{rt_n - a}{r - 1}$
8. $S = \dfrac{a}{1 - r},\ -1 < r < 1$

IV. Statistics

1. $\mu = \dfrac{x_1 + x_2 + \ldots + x_n}{n}$
2. $\sigma = \sqrt{\dfrac{(x_1 - \mu)^2 + \ldots + (x_n - \mu)^2}{n}}$
3. $z = \dfrac{x - \mu}{\sigma}$

FOLD AND TEAR ALONG PERFORATION

AREAS UNDER THE STANDARD NORMAL CURVE



z	0	1	2	3	4	5	6	7	8	9
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0754
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2258	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2518	0.2549
0.7	0.2580	0.2612	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2996	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000

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